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EXAMINER	
KIM, DAVID S	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/808,683	WELLEN, JEROEN SIEBRAND	
	Examiner	Art Unit	
	DAVID S. KIM	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6-9,11 and 13-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,6-9,11 and 13-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1, 3, 4, 6-9, 11, and 13-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Combs et al. (U.S. Patent No. 6,751,417 B1, hereinafter "Combs") in view of de Cook et al. ("Optical fiber access-perspectives toward the 21st century", hereinafter "Cook").

Regarding claim 1, Combs discloses:

In an optical access network, a method for the communication of services between a central office and customer premises (end-users 112 in Fig. 1), comprising:

transmitting (arrows pointing to the right in Figs. 3-4) services from said central office (head-end 102 in Fig. 1) to said customer premises through a passive all-optical downstream path (e.g., paths associated with optical splitters 316 in Fig. 3 and 304 in Fig. 4 are all-optical from head-end 102 to a mini-fiber node 108) having a first termination at said central office (e.g., termination of 114 at head-end 102 in Fig. 1); and

receiving (arrows pointing to the left in Figs. 3-4) services from said customer premises at said central office from an active optical path (e.g., upstream links in Figs. 3-4) having a first termination (e.g., termination at end-users 112 in Fig. 1) at said customer premises and a second termination at said central office (e.g., termination of 114 at head-end 102 in Fig. 1).

Combs does not expressly disclose:

said ***passive*** all-optical downstream path having a ***second termination at said customer premises***.

Rather, Combs teaches a distribution configuration to customer premises where the passive optical downstream path has a second termination at an intermediate distribution site before the customer premises (mini-fiber nodes 108 in Fig. 1). Notice that this distribution configuration to customer premises is also known as a fiber/coax hybrid network, as noted in Cook (p. 83-84 , "Fiber/Coax Systems"), since it employs fiber and coaxial lines in a hybrid network (Combs, fibers 114, 120, 122 and coaxial lines in col. 3, l. 42-43). However, other alternative distribution configurations to customer premises are known in the field of art, such as "fiber-to-the-building" (Cook, FTTB in Fig. 6) and "fiber-to-the-home" (FTTH) (Cook, "Fiber-to-the-Home" on p. 84, col. 2., last paragraph – p. 85, col. 1). FTTB and FTTH both employ a passive optical downstream path with a second termination at customer premises (Cook, fiber to Customer's premises in Fig. 6, "fiber-to-the-home" implies termination at the "home"/customer premises). As they both present suitable alternatives to a fiber/coax hybrid network, it follows that they constitute obvious variations. Moreover, movement toward digital baseband solutions is likely to encourage the adoption of an all fiber approach, such as FTTH, for fully adequate upstream capability for the long term (Cook, p. 86, col. 1, 1st two full paragraphs).

Regarding claim 3, Combs in view of Cook discloses:

The method of claim 1, wherein said passive all-optical downstream path comprises a means for splitting optical signals (optical splitters 316 in Fig. 3 and 304 in Fig. 4).

Regarding claim 4, Combs in view of Cook discloses:

The method of claim 3, wherein said means for splitting optical signals comprises an optical power splitter (optical splitters 316 in Fig. 3 and 304 in Fig. 4).

Regarding claim 6, Combs in view of Cook discloses:

The method of claim 1, wherein said active optical upstream path comprises:

at least one receiver for receiving services from said customer premises intended for upstream transmission (e.g., transceivers in 312 in Fig. 4).

Combs does not expressly disclose:

at least one switch for aggregating and multiplexing upstream traffic.

However, such switches are extremely well known in the art. Notice that Combs discloses the use of time-division multiplexing (TDM) for aggregating and multiplexing upstream traffic (col. 8, l. 5-8). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement this TDM with at least one switch. One of ordinary skill in the art would have been motivated to do this since TDM is conventionally performed with a switch.

Regarding claim 7, Combs in view of Cook discloses:

The method of claim 6, wherein said active optical upstream path further comprises:

at least one transmitter for transmitting the aggregated services upstream (digital lightwave transmitter in 302 in Fig. 4).

Regarding claim 8, claim 8 is an apparatus claim that corresponds largely to the method claim 6. Therefore, the recited steps in method claim 6 read on the corresponding means in apparatus claim 8. Claim 8 also includes limitations absent from claim 6. Combs in view of Cook also discloses these limitations:

a splitter disposed in a passive all-optical downstream path (e.g., paths associated with optical splitters 316 in Fig. 3 and 304 in Fig. 4 are passive all-optical from head-end 102 in Fig. 1 of Combs to the Customer's premises in Fig. 6 of Cook or to the “home”/customer premises of “fiber-to-the-home” of Cook), for splitting downstream services transmitted from said central office through said passive all-optical downstream path (optical splitter 304 in Fig. 4);

at least one receiver disposed in an active optical upstream path (e.g., upstream links in Figs. 3-4), for receiving services from said customer premises from said active optical upstream path (e.g., lightwave receivers in 320 in Fig. 3, transceivers in 312 in Fig. 4).

Regarding claim 9, Combs in view of Cook discloses:

The apparatus of claim 8, further comprising:

at least one transmitter for transmitting aggregated services upstream (digital lightwave transmitter in 302 in Fig. 4).

Regarding claim 11, Combs in view of Cook does not expressly disclose:

The apparatus of claim 8, wherein said passive all-optical downstream path further comprises a repeater.

However, repeaters are extremely well known in the art. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to arrange said passive optical path of Combs to further comprise a repeater. One of ordinary skill in the art would have been motivated to do this since repeaters are generally used to boost signal power along a transmission path so that transmission signals can travel farther.

Regarding claim 13, Combs in view of Cook discloses:

The apparatus of claim 8, wherein said active optical upstream path further comprises a transmitter (the digital lightwave transmitter in 302 in Fig. 4 is an active component).

Regarding claim 14, Combs in view of Cook discloses:

The apparatus of claim 8, wherein said splitter comprises a power splitter (optical splitter generally operate to split power).

Regarding claim 15, Combs in view of Cook discloses:

The apparatus of claim 8, wherein said apparatus is located within a central office of an access network configured for point-to-point communication (e.g., communication between the point of head-end 102 and the point of an end-user 112 in Fig. 1).

Regarding claim 16, Combs in view of Cook discloses:

An apparatus for the communication of services between a central office and customer premises in an optical access network, comprising:

a means for splitting downstream services transmitted from said central office (head-end 102 in Fig. 1) though a passive all-optical downstream path (e.g., paths associated with optical splitters 316 in Fig. 3 and 304 in Fig. 4 are passive all-optical from head-end 102 in Fig. 1 of Combs to the Customer's premises in Fig. 6 of Cook or to the “home”/customer premises of “fiber-to-the-home” of Cook);

at least one means for receiving services (e.g., lightwave receivers in 320 in Fig. 3, transceivers in 312 in Fig. 4) from said customer premises (Combs, end-users 112 in Fig. 1; Cook, fiber to Customer's

premises in Fig. 6, “fiber-to-the-home” implies termination at the “home”/customer premises) from an active optical upstream path (e.g., upstream links in Figs. 3-4); and

at least one means for aggregating and multiplexing upstream traffic in said active optical upstream path (e.g., 318 in Fig. 3, 310 and 308 in Fig. 4);

wherein said passive all-optical downstream path has a first termination at said central office (e.g., termination of 114 at head-end 102 in Fig. 1) and a second termination at said customer premises (Cook, fiber to Customer's premises in Fig. 6, “fiber-to-the-home” implies termination at the “home”/customer premises);

wherein said active optical upstream path has a first termination at said customer premises (Combs, e.g., termination at end-users 112 in Fig. 1; Cook, fiber to Customer's premises in Fig. 6, “fiber-to-the-home” implies termination at the “home”/customer premises) and a second termination at said central office (e.g., termination of 114 at head-end 102 in Fig. 1).

Regarding claim 17, Combs in view of Cook discloses:

The apparatus of claim 16, further comprising:

at least one means for transmitting the aggregated services upstream (e.g., lightwave transmitters in 314 in Fig. 3, lightwave transmitters in Fig. 4).

Regarding claim 18, Combs in view of Cook discloses:

A passive/active optical access network for the communication of services between a central office and customer premises, comprising:

a central office (head-end 102 in Fig. 1);

at least one customer premise (end-users 112 in Fig. 1); and

an active/passive access unit (Figs. 3-4) for providing communication between said central office and said at least one customer premise, wherein said passive/active access network is adapted to:

transmit services from said central office to said customer premises through a passive all-optical downstream path (e.g., paths associated with optical splitters 316 in Fig. 3 and 304 in Fig. 4 are passive all-optical from head-end 102 in Fig. 1 of Combs to the Customer's premises in Fig. 6 of Cook or to the “home”/customer premises of “fiber-to-the-home” of Cook), wherein said passive all-optical downstream

path has a first termination at said central office (e.g., termination of 114 at head-end 102 in Fig. 1) and a second termination at said customer premises (Cook, fiber to Customer's premises in Fig. 6, "fiber-to-the-home" implies termination at the "home"/customer premises); and

receive services (e.g., lightwave receivers in 320 in Fig. 3, transceivers in 312 in Fig. 4) from said customer premises at said central office from said active optical upstream path (e.g., upstream links in Figs. 3-4), wherein said active optical upstream path has a first termination at said customer premises (Combs, e.g., termination at end-users 112 in Fig. 1; Cook, fiber to Customer's premises in Fig. 6, "fiber-to-the-home" implies termination at the "home"/customer premises) and a second termination at said central office (e.g., termination of 114 at head-end 102 in Fig. 1).

Regarding claim 19, Combs in view of Cook discloses:

The passive/active optical access network of claim 18, wherein said passive all-optical downstream path of said active/passive access unit comprises a means for splitting (optical splitters 316 in Fig. 3 and 304 in Fig. 4) services from said central office.

Regarding claim 20, Combs in view of Cook discloses:

The passive/active optical access network of claim 18, wherein said active optical upstream link of said active/passive access unit comprises:

at least one means for receiving (e.g., lightwave receivers in 320 in Fig. 3, transceivers in 312 in Fig. 4) services from said at least one customer premise;

at least one means for aggregating and multiplexing upstream traffic (e.g., 318 in Fig. 3, 310 and 308 in Fig. 4); and

at least one means for transmitting (e.g., lightwave transmitters in 314 in Fig. 3, lightwave transmitters in Fig. 4) the aggregated services upstream to said central office.

Response to Arguments

3. Applicant's arguments filed 28 August 2008 have been fully considered but they are not persuasive. Applicant presents eight salient points.

Regarding the first point, Applicant states:

> Claim 1 is non-obvious because the primary reference Combs does not teach or suggest "a **passive** all-optical downstream path." Applicant respectfully reiterates that Combs only teaches a single path **active network**, where all traffic between Head-End 102 and End-Users 112 must pass through active components in both directions (the Mini-Fiber Node 108 is at least one active component).
>
> (Remarks, p. 7, middle paragraph, emphasis Applicant's).

Examiner respectfully notes that the standing rejection relies on the *combination* of teachings from Combs *and* Cook. In view of Cook, the downstream paths associated with optical splitters 316 in Fig. 3 and 304 in Fig. 4 of Combs are passive all-optical from head-end 102 in Fig. 1 of Combs to the Customer's premises in Fig. 6 of Cook or to the "home"/customer premises of "fiber-to-the-home" of Cook. Accordingly, this point is not persuasive.

Regarding the second point, Applicant states:

> The Office Action claims that paths associated with Combs's optical splitters 316 in Fig. 3 and 304 in Fig. 4 disclose passive optical downstream communications. Respectfully, this is not correct. Both splitters are integrated components in the Mux-Node 104 of Fig. 1. The Mux-Node is a decidedly active component as described in Combs col. 11 lines 24-52 "Fig. 8 shows an exemplary flowchart of a process of the mux-node 104. In step 1000, the head-end lightwave interface device 410 receives optical signals from the head end 102, **converts the optical signals to electric signals** and forwards the electrical signals to the splitter 414..." (emphasis added). Thus it is not evident that the communication path suggested by the Office Action, beginning at the Head-end 102 and terminating at the Mini-Fiber Node 108, is even an entirely passive pathway.
>
> (Remarks, p. 7, last full paragraph, emphasis Applicant's).

Examiner respectfully notes that this portion of Combs refers to an embodiment that is not employed in the standing rejection. Rather, consider the embodiment(s) of Combs described in col. 6, l. 21-22 ("downstream signals are sent optically"), col. 6, l. 66-67 ("optically forward the first downstream signals") and col. 8, l. 19-24 ("the optical splitters 303, 316 and 304 may be packaged separately in different geographic locations. For example, optical splitter 303 may receive lightwave signals directly from the trunk 114 and output lightwave signals directly to the mFNs 108"), which does not convert the downstream optical signals to electrical signals. Accordingly, this point is not persuasive.

Regarding the third point, Applicant states:

> In addition, Combs does not teach or disclose the feature of claim 1 "a second termination at said customer premises." The Office Action suggests that Combs teaches "a second termination at an intermediate distribution site before the customer premises." Respectfully, this is an inherent contradiction. An "intermediate" distribution cannot also be a

> "termination." Furthermore, Combs' Mini-Fiber Node108 that the Office Action substitutes for Applicant's customer premises (i.e. the second termination) to support its obviousness rejection does not have the required functionality for a termination point (see Combs Fig. 5, the Mini-Fiber Node 108 has no functionality to operate as a termination point, it can only pass signals to and from the access network and the End-users).
>
> (Remarks, p. 7-8, bridging paragraph, emphasis Applicant's).

Examiner respectfully notes that the actual claim language of claim 1 simply discloses instances of "termination". Notice that the term "termination" is a relatively broad term.

Regarding Applicant's statement that "An 'intermediate" distribution cannot also be a 'termination'", notice that the general understanding of the term "termination" does not imply or suggest any lack of further distribution. That is, the actual claim language of claim 1 does not provide any additional limitations that restrict the term "termination" to the narrow scope of excluding further distribution. Rather, the standing rejection recognizes that the passive all-optical downstream path, i.e., the physical all-optical path, of Combs ends at an intermediate distribution site (mini-fiber nodes 108 in Fig. 1). Such an end of the passive all-optical downstream path, i.e., the physical all-optical path, of Combs properly constitutes a "termination", as claimed. Accordingly, Applicant's statement that "An 'intermediate" distribution cannot also be a 'termination'" is not persuasive.

Regarding Applicant's statement that "Combs' Mini-Fiber Node108… does not have the required functionality for a termination point", notice that the general understanding of the term "termination" does not imply or suggest "any required functionality" for the claimed "termination" point. That is, the actual claim language of claim 1 does not provide any additional limitations that restrict the term "termination" to the narrow scope of including such "any required functionality". Rather, the standing rejection recognizes that the passive all-optical downstream path, i.e., the physical all-optical path, of Combs ends at an intermediate distribution site (mini-fiber nodes 108 in Fig. 1). Such an end of the passive all-optical downstream path, i.e., the physical all-optical path, of Combs properly constitutes a "termination", as claimed. Accordingly, Applicant's statement that "Combs' Mini-Fiber Node108… does not have the required functionality for a termination point" is not persuasive.

Summarily, this point is not persuasive.

Regarding the fourth point, Applicant states:

> However, the Office Action does not assert how one could combine the references Combs and Cook to create an operable system like Applicant's. The mere knowledge of FTTH and FTTB does not suggest one way or the other whether downstream communication is passive or active as FTTH and FTTB are equally suitable for both passive and active network configurations. Nor does the Office Action refer to which portions of the references would render it obvious for one to combine the references in the manner claimed by the Applicant.
>
> (Remarks, p. 8, last full paragraph).

Regarding Applicant's statements that "the Office Action does not assert how one could combine the references Combs and Cook to create an operable system like Applicant's" and that "Nor does the Office Action refer to which portions of the references would render it obvious for one to combine the references in the manner claimed by the Applicant", Examiner respectfully notes that the treatment of claims 1, 16, and 18 does provide such an explanation. However, Applicant does not recognize or address the merits of this explanation. To further elaborate on this explanation provided in the treatment of claim 1, 16, and 18, notice the following highlighted portions of the treatment of claims 1, 16, and 18:

> **(claim 1)**
>
> Rather, Combs teaches a distribution configuration to customer premises where the passive optical downstream path has a second termination at an intermediate distribution site before the customer premises (mini-fiber nodes 108 in Fig. 1). Notice that this distribution configuration to customer premises is also known as a fiber/coax hybrid network, as noted in Cook (p. 83-84 , "Fiber/Coax Systems"), since it employs fiber and coaxial lines in a hybrid network (Combs, fibers 114, 120, 122 and coaxial lines in col. 3, l. 42-43). However, other alternative distribution configurations to customer premises are known in the field of art, such as "fiber-to-the-building" (Cook, FTTB in Fig. 6) and "fiber-to-the-home" (FTTH) (Cook, "Fiber-to-the-Home" on p. 84, col. 2., last paragraph – p. 85, col. 1). FTTB and FTTH both employ a passive optical downstream path with a second termination at customer premises ***(Cook, fiber to Customer's premises in Fig. 6, "fiber-to-the-home" implies termination at the "home"/customer premises)***. As they both present suitable alternatives to a fiber/coax hybrid network, it follows that they constitute obvious variations. Moreover, movement toward digital baseband solutions is likely to encourage the adoption of an all fiber approach, such as FTTH, for fully adequate upstream capability for the long term (Cook, p. 86, col. 1, 1st two full paragraphs).
>
> **(claim 16)**
>
> …a means for splitting downstream services transmitted from said central office (head-end 102 in Fig. 1) though a passive all-optical downstream path ***(e.g., paths associated with optical splitters 316 in Fig. 3 and 304 in Fig. 4 are passive all-optical from head-end 102 in Fig. 1 of Combs to the Customer's premises in Fig. 6 of Cook or to the "home"/customer premises of "fiber-to-the-home" of Cook)***;
>
> at least one means for receiving services (e.g., lightwave receivers in 320 in Fig. 3, transceivers in 312 in Fig. 4) from said customer premises ***(Combs, end-users 112 in Fig. 1; Cook, fiber to Customer's premises in Fig. 6, "fiber-to-the-home" implies termination at the "home"/customer premises)*** from an active optical upstream path (e.g., upstream links in Figs. 3-4); and…

> …wherein said passive all-optical downstream path has a first termination at said central office (e.g., termination of 114 at head-end 102 in Fig. 1) and a second termination at said customer premises ***(Cook, fiber to Customer's premises in Fig. 6, "fiber-to-the-home" implies termination at the "home"/customer premises)***;
>
> wherein said active optical upstream path has a first termination at said customer premises ***(Combs, e.g., termination at end-users 112 in Fig. 1; Cook, fiber to Customer's premises in Fig. 6, "fiber-to-the-home" implies termination at the "home"/customer premises)*** and a second termination at said central office (e.g., termination of 114 at head-end 102 in Fig. 1).
>
> **(claim 18)**
>
> transmit services from said central office to said customer premises through a passive all-optical downstream path ***(e.g., paths associated with optical splitters 316 in Fig. 3 and 304 in Fig. 4 are passive all-optical from head-end 102 in Fig. 1 of Combs to the Customer's premises in Fig. 6 of Cook or to the "home"/customer premises of "fiber-to-the-home" of Cook)***, wherein said passive all-optical downstream path has a first termination at said central office (e.g., termination of 114 at head-end 102 in Fig. 1) and a second termination at said customer premises ***(Cook, fiber to Customer's premises in Fig. 6, "fiber-to-the-home" implies termination at the "home"/customer premises)***; and
>
> receive services (e.g., lightwave receivers in 320 in Fig. 3, transceivers in 312 in Fig. 4) from said customer premises at said central office from said active optical upstream path (e.g., upstream links in Figs. 3-4), wherein said active optical upstream path has a first termination at said customer premises ***(Combs, e.g., termination at end-users 112 in Fig. 1; Cook, fiber to Customer's premises in Fig. 6, "fiber-to-the-home" implies termination at the "home"/customer premises)*** and a second termination at said central office (e.g., termination of 114 at head-end 102 in Fig. 1).

Accordingly, Applicant's statements that "the Office Action does not assert how one could combine the references Combs and Cook to create an operable system like Applicant's" and that "Nor does the Office Action refer to which portions of the references would render it obvious for one to combine the references in the manner claimed by the Applicant" are not persuasive.

Regarding Applicant's statement that "The mere knowledge of FTTH and FTTB does not suggest one way or the other whether downstream communication is passive or active as FTTH and FTTB are equally suitable for both passive and active network configurations", Examiner respectfully notes that Cook teaches that the downstream communication in FTTB (Cook, there is no active component between the Exchange site and Customer's premises for downstream communication in the FTTB in Fig. 6, only splitters, which are understood to be passive) and FTTH (Cook, there would be no "active electronics" for downstream communication in the FTTH on p. 84, col. 2., last paragraph – p. 85, col. 1) is passive, not active. Accordingly, Applicant's statement that "The mere knowledge of FTTH and FTTB does not

suggest one way or the other whether downstream communication is passive or active as FTTH and FTTB are equally suitable for both passive and active network configurations" is not persuasive.

Summarily, this point is not persuasive.

Regarding the fifth point, Applicant states:

> Upgrading Combs to implement FTTH would involve extending the fiber in the Combs' Fig. 1 from the Mini-Fiber Note 108 to the End-user 112 and would merely create an FTTH active optical access network which is known in the art. Accordingly, neither Combs nor Cook suggests modifying Combs to implement the Applicant's dual system. The rejection under 35 U.S.C. §103(a) is therefore improper.
>
> (Remarks, p. 8-9, bridging paragraph).

Examiner respectfully that the combination of Combs and Cook includes the dual aspects of a passive all-optical downstream path (e.g., paths associated with optical splitters 316 in Fig. 3 and 304 in Fig. 4 are passive all-optical from head-end 102 in Fig. 1 of Combs to the Customer's premises in Fig. 6 of Cook or to the "home"/customer premises of "fiber-to-the-home" of Cook) and the active optical upstream path (paths from the termination at end-users 112 in Fig. 1 of Combs, which would comprise the fiber to Customer's premises in Fig. 6 of Cook or the "fiber-to-the-home" termination at the "home"/customer premises of Cook, to the termination of 114 at head-end 102 in Fig. 1 of Combs, which would include the active upstream links in Figs. 3-4 of Combs). Accordingly, this point is not persuasive.

Regarding the sixth point, Applicant states:

> In fact, Combs would need to be substantially modified in a way that is not taught or disclosed by Combs, Cook or a combination of the two in order to achieve the embodiment of Applicant's claim 1. At least the following modifications would be required: the Mux-Node 104 of Combs' Fig. 1 would need to be substituted by the A/P Access Unit 120 (Fig. 1) or 220 (Fig. 2) in Applicant's system, the Mini-Fiber Node 108 removed, and each End-user 112 connected to the A/P Access Unit via separate fiber optic cables. In such circumstances, requiring a total overhaul of the references' teachings, courts have held that the claims are non-obvious. *See In Re Ratti*, 270 F.2d 810, 123 USPQ 349 (C.C.P.A. 1959) ("the combination of [references] is not a proper ground for rejection ...This suggested combination of references would require a substantial reconstruction and redesign of the elements...as well as a change in the basic principles under which the [primary reference] was designed to operate.")
>
> (Remarks, p. 9, 1st full paragraph).

Examiner respectfully disagrees with Applicant's modifications. The standing rejection already presents the required modifications (see the treatment of claim 1 above):

> Rather, Combs teaches a distribution configuration to customer premises where the passive optical downstream path has a second termination at an intermediate distribution site before the customer premises (mini-fiber nodes 108 in Fig. 1). Notice that this distribution configuration to customer premises is also known as a fiber/coax hybrid network, as noted in Cook (p. 83-84 , "Fiber/Coax Systems"), since it employs fiber and coaxial lines in a hybrid network (Combs, fibers 114, 120, 122 and coaxial lines in col. 3, l. 42-43). However, other alternative distribution configurations to customer premises are known in the field of art, such as "fiber-to-the-building" (Cook, FTTB in Fig. 6) and "fiber-to-the-home" (FTTH) (Cook, "Fiber-to-the-Home" on p. 84, col. 2., last paragraph – p. 85, col. 1). FTTB and FTTH both employ a passive optical downstream path with a second termination at customer premises (Cook, fiber to Customer's premises in Fig. 6, "fiber-to-the-home" implies termination at the "home"/customer premises). As they both present suitable alternatives to a fiber/coax hybrid network, it follows that they constitute obvious variations. Moreover, movement toward digital baseband solutions is likely to encourage the adoption of an all fiber approach, such as FTTH, for fully adequate upstream capability for the long term (Cook, p. 86, col. 1, 1st two full paragraphs).

Instead of the downstream distribution configuration to customer premises using mini-fiber nodes 108 in the fiber/coax hybrid network distribution configuration in Fig. 1 of Combs, the teachings of Cook provide the suitable alternatives of the downstream distribution configurations to customer premises exemplified by the downstream distribution configurations of FTTB or FTTH, i.e., "FTTB and FTTH both employ a passive optical downstream path with a second termination at customer premises". Furthermore, Cook expressly discusses the implementation of FTTH teachings as an alternative to fiber/coax hybrid network teachings ("In contrast to the fiber/coax hybrid networks, an FTTH solution removes the need for active electronics within the network" on p. 84-85, bridging paragraph). In other words, not only does Cook provide suggest an alternative downstream distribution configuration to customer premises for the fiber/coax hybrid network distribution configuration in Fig. 1 of Combs, but Cook also provides a practical instruction on how to implement the alternative configuration, i.e., remove active electronics. In short, the standing rejection recognizes that the prior art of record sufficiently teaches the required modifications for the combination of Combs and Cook employed in the standing rejection. Accordingly, this point is not persuasive.

Regarding the seventh point, Applicant states:

> Alternatively, considering Combs' Mini-Fiber Node 108 Fig. 1 as the "second termination" as suggested by the Office Action (p. 2 lines 1-3) would result in a non-functional passive optical network. The network would be non-functional because (1) one would need to substitute an End-User 112 for the Mini-Fiber Node 108 (2) the End-user would require the additional capabilities of receiving and transmitting optical data, and (3) there would be upstream data collision at the Mux-Node 104 without implementation of a time division multiplexing or similar shared access protocol. This would require an additional controller and appropriate software/hardware at the

> Mini- Fiber Node 108 and Head-end 102 (see Cook p. 79-80 "a multiple access protocol must be implemented to ensure that the returning bit stream from each customer is appropriately synchronized at the exchange."). In similar circumstances wherein the proposed combination of references would result in an inoperable device, courts have held that the references cannot support an examiner's prima facie case for obviousness. *See McGinley v. Franklin Sports Inc.*, 262 F.3d 1339, 60 USPQ2d 1010 (Fed.Cir. 2001) ("If references taken in combination would produce a 'seemingly inoperative device,' we have held that such references teach away from the combination and thus cannot serve as predicates for a prima facie case of obviousness.")
>
> (Remarks, p. 9-10, bridging paragraph).

Examiner respectfully notes that combination of the Combs and Cook addresses these three issues:

(1) Cook teaches the substitution of active electronics and coax, i.e., mini-fiber nodes 108 and the coax connections to end-users 112 in Fig. 1 of Combs, with fiber to the customer premises (Cook, substitution of fiber/coax hybrid network teachings with FTTH teachings on p. 84-85, bridging paragraph).

(2) Cook shows these “additional capabilities of receiving and transmitting optical data” through “Optics” in Fig. 6.

(3) Combs teaches such time division multiplexing (“TDM” in col. 8, l. 5-8).

Accordingly, this point is not persuasive.

Regarding the eighth point, Applicant states:

> In addition, Cook explicitly teach away from Combs and Applicant's system/method. As stated in Applicant's Specification at par. 5, passive optical networks were designed to overcome perceived limitations with active optical networks. The Cook reference, acknowledging efforts to advance both active ("active double star" or ADS) and passive optical network (PON) approaches comes out in clear favor of PONs: "In Europe the drive has centered more on the deployment of fiber systems directly to buildings--thus avoiding the need for active nodes in the network... BT [British Telecom] studies have shown that the PON approach has greater benefits in minimizing the proportion of the per line cost incurred in deploying equipment at the exchange and in the fiber infrastructure down to the customer...The synergy between PON systems and SDH [synchronous digital hierarchy] is expected to grow" (Cook p. 80-81 (both authors are associated with British Telecom Labs)). Cook is also critical of both Combs' and Applicant's approaches, stating "The drive [in the U.S.] has been to develop FTTC systems (ADS and PON) for general deployment in residential areas. Given the relatively low density of U.S. housing developments, this ideally requires very small active nodes to be deployed at the curb serving only 4 living units (LUs). The problems of engineering, installing powering and maintaining such large numbers of small nodes, and at the same time achieving acceptable whole life costs, are particularly difficult" (Cook p. 80). Combs' system requires an "active node" (the Mini-Fiber Node 108) with active components, deployed in the field to service a small handful of End-users 112. Applicant's system, while vastly different than Combs', also requires a locally deployed node with active components (the A/P Access Unit 120 in Fig. 1 or 220 in Fig. 2 for upstream data transmission) even with fiber extending to the customer premises. Accordingly, Applicant submits that the proposed combination of Combs and Cook is not obvious under 35 U.S.C. 103(a) as Cook **teaches away** from Applicant's system/method.

(Remarks, p. 10-11, bridging paragraph, emphasis Applicant's).

Examiner respectfully notes that these citations from Cook are contextual. That is, Cook recognizes that some contexts employ active optical network technology (FTTC in the U.S.) and other contexts employ passive optical network technology (PONs in Europe). However, these contexts are unpersuasive considerations because the standing rejection recognizes that *Combs* is the starting point, not Cook. Moreover, Applicant's citations of Cook for Applicant's position that "Cook teaches away from Applicant's system/method" is also an unpersuasive consideration because the standing rejection recognizes that *Combs* is the starting point, not Cook. That is, the standing rejection begins with Combs, in particular, the components of Figs. 3 and 4, and retains the components of Figs. 3 and 4 in the combination with Combs and Cook (e.g., see the treatment of claims 16 and 18). The mux-nodes of Figs. 3 and 4 of Combs *already* include both active (the active upstream links in Figs. 3-4 of Combs) and passive ("downstream signals are sent optically" in col. 6, l. 21-22; "optically forward the first downstream signals" in col. 6, l. 66-67; "the optical splitters 303, 316 and 304 may be packaged separately in different geographic locations. For example, optical splitter 303 may receive lightwave signals directly from the trunk 114 and output lightwave signals directly to the mFNs 108" in col. 8, l. 19-24) elements.

The main difference between Combs and Applicant's claimed invention is *not* the issue of whether or not active and/or passive elements are employed, or even whether or not "Cook teaches away from Applicant's system/method". Rather, the main difference is the issue of the "distribution configuration to customer premises", as noted in the treatment of claim 1. For this issue of the downstream "distribution configuration to customer premises", Combs teaches a fiber/coax hybrid network distribution configuration. Cook recognizes this fiber/coax hybrid network distribution configuration (p. 83-84 , "Fiber/Coax Systems") and teaches suitable alternative distribution configurations to customer premises (Cook, fiber to Customer's premises in Fig. 6, "fiber-to-the-home" implies termination at the "home"/customer premises), even promoting an all fiber approach, such as FTTH, for fully adequate upstream capability for the long term (Cook, p. 86, col. 1, 1st two full paragraphs). Therefore, contrary to Applicant's position that Cook teaches away from Applicant's system/method, Cook teaches, and even promotes, the aspect of a passive all-optical downstream "distribution configuration to customer

premises", similar to Applicant's passive all-optical downstream path (Applicant's Fig. 1, paths to CPs 130). Thus, the combination of Combs and Cook, regarding the issue of the downstream "distribution configuration to customer premises" is appropriate and obvious. Accordingly, this point is not persuasive.

Summarily, Applicant's arguments are not persuasive. Accordingly, Examiner respectfully maintains the standing rejections.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID S. KIM whose telephone number is (571)272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. S. K./
Examiner, Art Unit 2613

/Kenneth N Vanderpuye/
Supervisory Patent Examiner, Art Unit 2613